

**Abstract**

For an optical network including photonic nodes and photonic/optical node, we introduce a concept of photonic cell. Each optical node with DWDM optics forms a base node for a photonic cell. Nodes are members of a photonic cell if they are within optical reach of the base node. Every other optical node with DWDM optics within the photonic cell also serves as a base node for its own photonic cell. By mapping the network to overlapping photonic cells, route alternatives can be determined by using the cell membership tables as a constraint rather than having to invoke complex link engineering computations as part of the routing method.

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